

**Clinical
Diagnosis**



Cardiology



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Chest pain



Clinical Diagnosis: Key points

Is the chest pain acute or chronic?



If the pain is **acute** you should consider acute myocardial infarction, dissecting aneurysm, pulmonary embolism, pneumothorax, pericarditis, and fractures. If the chest pain is **chronic** consider chronic coronary insufficiency, esophagitis, hiatal hernia, and various chest wall painful conditions.

Is the pain constant or intermittent?



Constant pain suggests acute myocardial infarction, pulmonary infarction, dissecting aneurysm, and pneumonia.

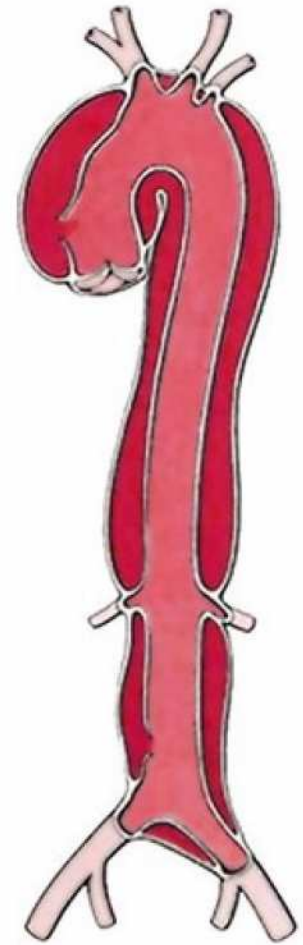
Intermittent pain would suggest coronary insufficiency & Tietze's disease.

Intermittent chest pain at rest may be caused by Prinzmetal angina.

Is there associated hypertension?



Significant hypertension would make or think of dissecting aneurysm, but it is also found occasionally in acute myocardial infarction.



Is the pain relieved by antacids?



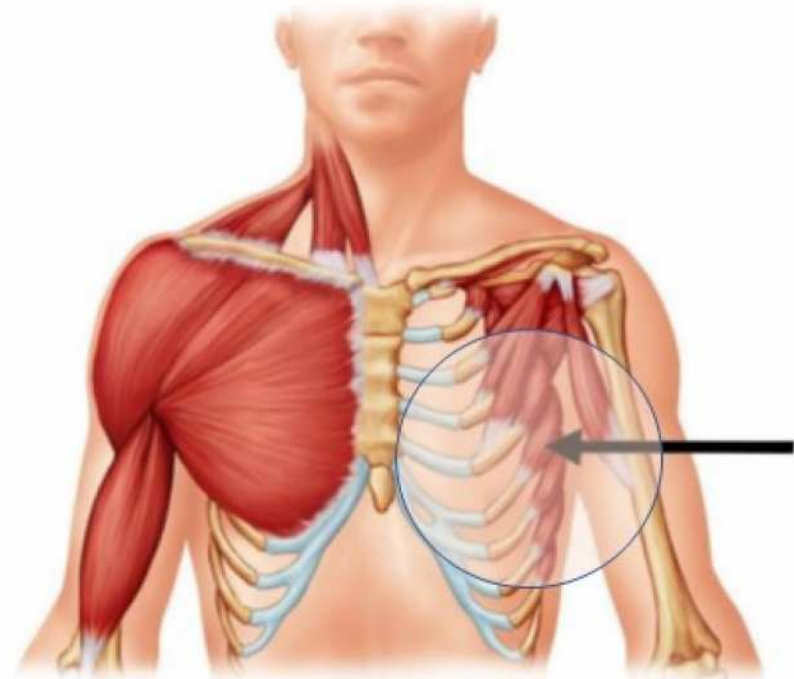
Relief by antacids should prompt the physician to consider reflux esophagitis and hiatal hernia.



Is the pain precipitated or increased by breathing?



If the pain is precipitated or increased by breathing consider pleurisy, costochondritis, rib fractures, and pneumothorax.

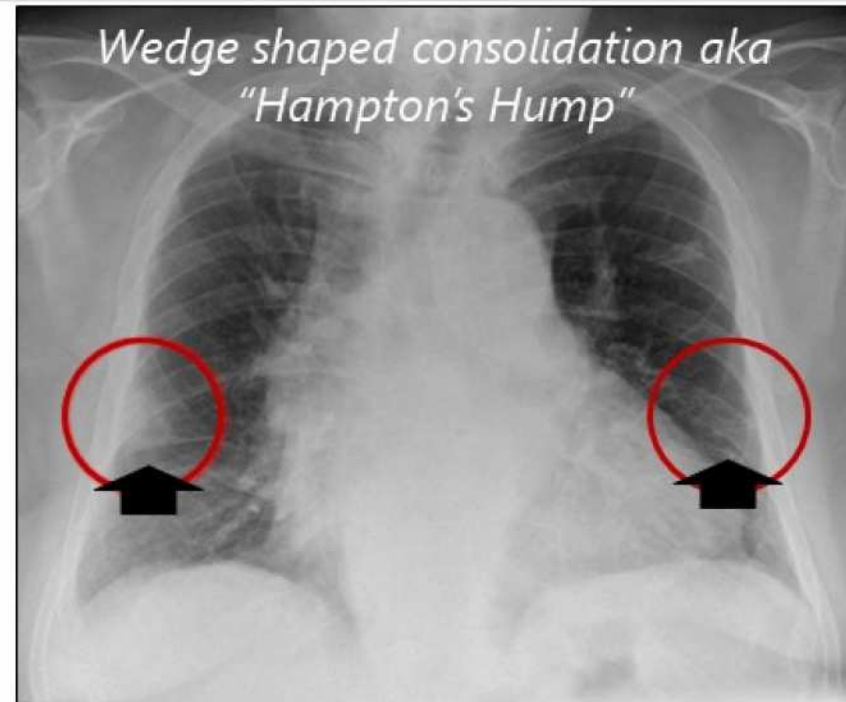
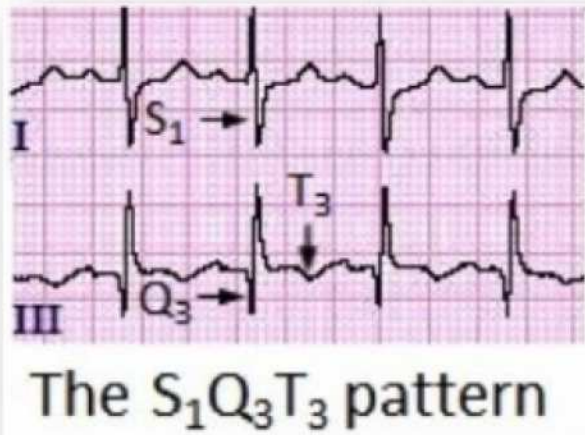


In costochondritis, there is tenderness of the costochondral junctions.

Is there associated hemoptysis?



Hemoptysis in a case of chest pain should make one consider a **pulmonary embolism**.



Is there fever and purulent sputum?



Fever and purulent sputum
should make you consider
pneumonia.

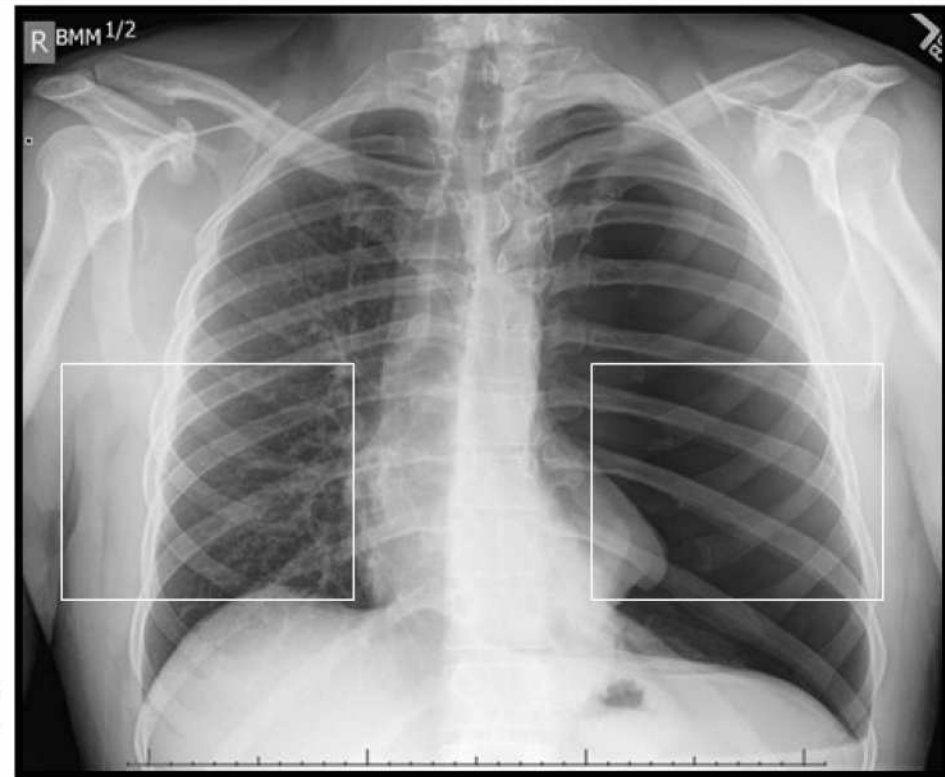


Does the patient have dyspnea?



Dyspnea should make you suspect:

- ① Pneumothorax
- ② Pulmonary embolism
- ③ Pneumonia
- ④ Congestive heart failure secondary to acute myocardial infarction



Is the pain aggravated by movement?



Aggravation of the chest pain by movement suggests the presence of **pericarditis**.



Note: Myocardial infarction may be complicated by pericarditis.

Is the pain relieved by nitroglycerin?



Relief of the pain by nitroglycerin suggests **coronary insufficiency** (**Note:** Esophageal spasms may be also relieved by nitroglycerin!)



Is the pain relieved by lidocaine viscous?



Relief with 5 to 10 mL of lidocaine viscous will help diagnose reflux esophagitis.





Major Threat to Life in cases of acute chest pain include:

- ① Acute coronary syndrome
- ② Aortic dissection
- ③ Pneumothorax
- ④ Pulmonary embolism



If acute coronary syndrome is suspected order:

1. **Electrocardiogram (ECG)**
2. **Pulse oximetry reading:** If the oxygen saturation level is 93% or less, supplemental oxygen should be given to maintain a saturation of 94% or more.
3. **Insert an Intravenous cannula :** IV access may be needed to deliver medications and fluids.
4. **Give Nitroglycerin:** 0.3 to 0.6mg sublingually every 5 minutes, *provided there is no contraindication.*



Contraindications for using Nitroglycerin include:

- ① **Recent** (within 24 to 48 hours) ingestion of a phosphodiesterase-5 enzyme inhibitor,
- ② **Systolic** blood pressure less than 90 mm Hg,
- ③ **Heart rate** less than 40/minute or greater than 140/minute,
- ④ **Right ventricular infarct.**



Most patients with chest pain have normal blood pressure.

Hypotension may be seen with MI, massive pulmonary embolism, aortic dissection that results in cardiac tamponade, or tension pneumothorax.



Hypertension, occurring in association with myocardial ischemia or aortic dissection, should be treated urgently.



The ECG should be reviewed immediately after the vital signs are measured, to avoid delays in administering reperfusion therapy if the patient is having an acute ST-segment elevation MI.



Remember that a normal ECG does not rule out the possibility of an acute coronary syndrome.



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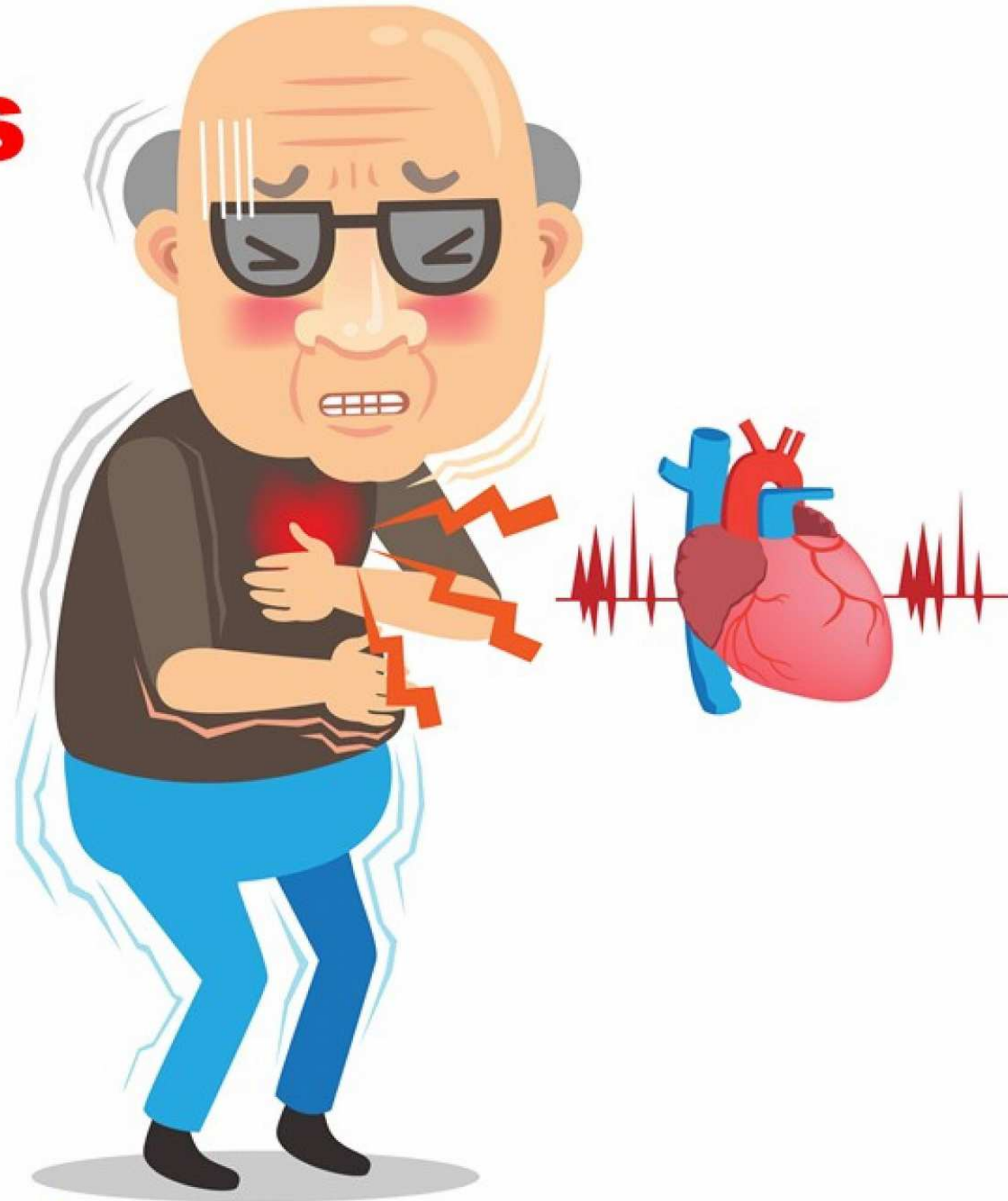


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Palpitations



Clinical Diagnosis: Key points

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Are the palpitations constant or intermittent?



Constant palpitations would suggest hyperthyroidism or overuse of caffeine and other drugs. It can be also seen with fever of unknown origin (FUO).



Are the palpitations constant or intermittent?



Intermittent palpitations are more likely related to a **cardiac arrhythmia**.



Are there associated symptoms?



Palpitations with **weight loss, increased appetite, and polyuria** would suggest hyperthyroidism.



Are there associated symptoms?



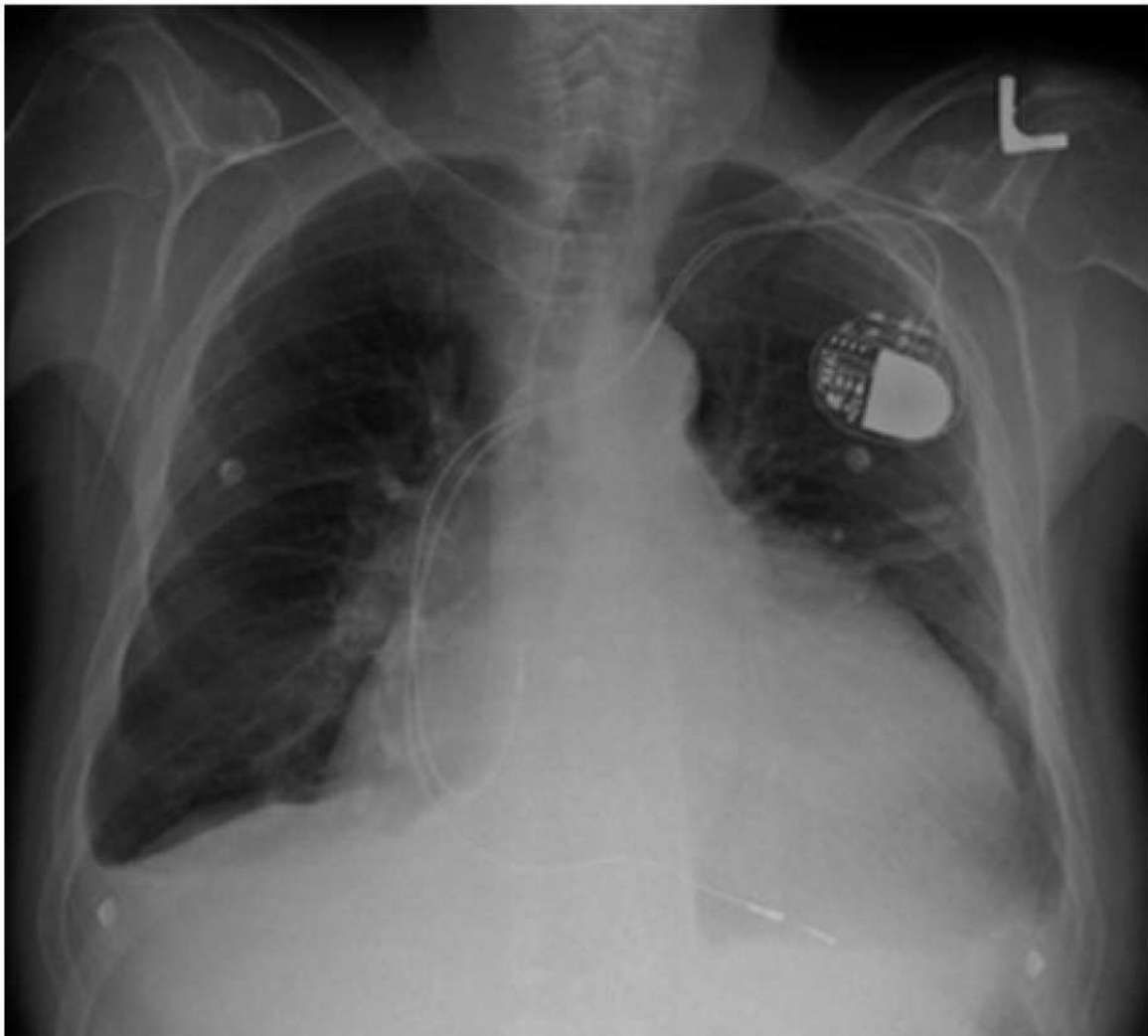
Palpitations with **shortness of breath and pitting edema** would suggest congestive heart failure.



Are there positive physical findings?

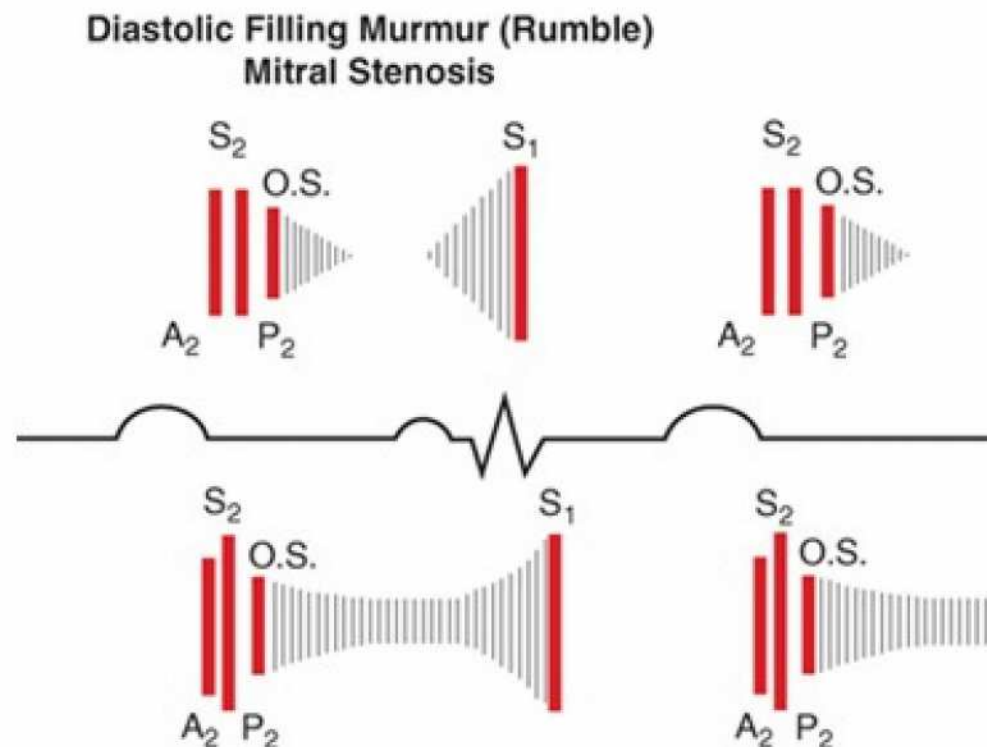


If there is **cardiomegaly**, consider the possibility of congestive heart failure or valvular heart disease.



Are there positive physical findings?

If you find **a cardiac murmur**, it is more likely that there is underlying valvular heart disease such as acute or chronic rheumatic fever.

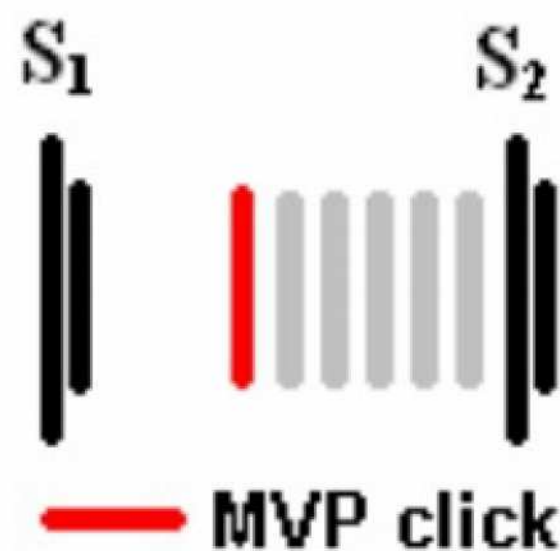


Are there positive physical findings?



The presence of **Mid-late systolic click** on cardiac auscultation suggests **Mitral valve prolapse** as the cause of the palpitations.

Mitral valve prolapse



Are there positive physical findings?



Murmur (especially murmur of Aortic Incompetence), with low grade fever in a cardiac patient would suggest bacterial endocarditis (SBE).

Aortic Regurgitation



Are there positive physical findings?



Palpitations with **hypertension** would suggest pheochromocytoma, particularly if it is systolic hypertension, but it can also be found in hyperthyroidism.



Are there positive physical findings?



Palpitations with **a totally normal physical examination** suggest sensitivity to caffeine or the use of other drugs.





Drugs that may cause palpitations:

- ① Digoxin can cause atrioventricular (AV) heart block with variable conduction.
- ② Diuretic-induced hypokalemia and hypomagnesemia AND the use of antiarrhythmic drugs can cause both PACs and PVCs.
- ③ Many asthma drugs and other stimulants to the heart can cause an irregular heartbeat.

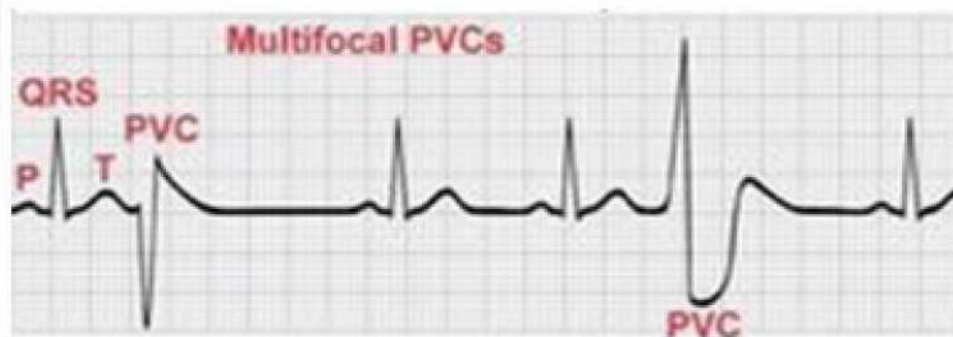


Make sure to examine the ECG for:

- ① Evidence of myocardial ischemia.
- ② Drug effects such as prolongation of the QT interval.
- ③ Electrocardiographic changes of pulmonary embolism (S1, Q3, T3, acute right bundle branch block, acute right-axis deviation),
- ④ Pericarditis (diffuse ST-elevation with upward concavity, T-wave inversion, and PR-segment depression).



In case of frequent or multifocal PVCs after an MI or with impaired left ventricular function, be sure to exclude predisposing conditions, such as hypokalemia, hypoxemia, hypomagnesemia, acidosis, alkalosis, and myocardial ischemia.



Beta-blockers are the agents of choice to treat such a condition because they are the only class of drugs proven to decrease the incidence of sudden cardiac death in postinfarction patients.

Syncope



Clinical Diagnosis: Key points

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Are there associated convulsive movements or incontinence?



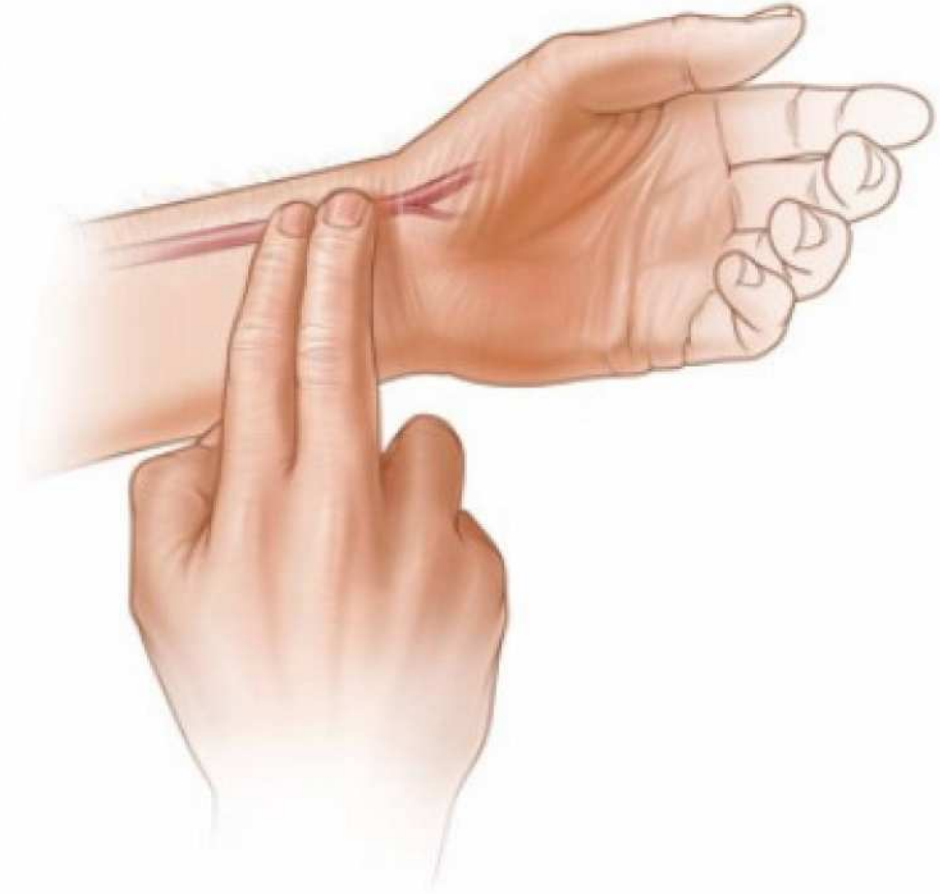
The presence of convulsive movements should suggest the possibility of epilepsy.



Is the pulse slow or absent?



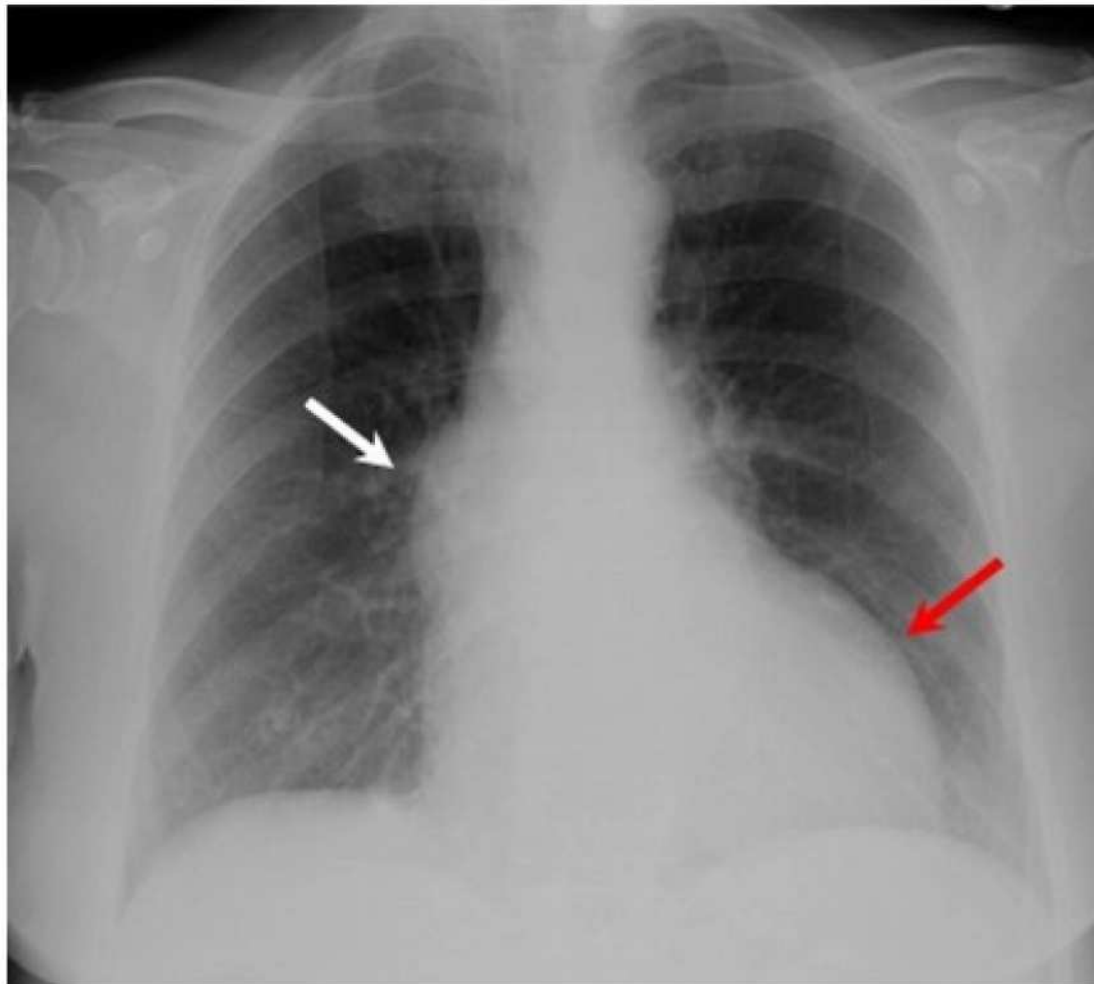
The presence of a slow or absent pulse would suggest heart block, vasovagal attack, and carotid sinus syndrome.



Is the pulse rate normal?



The presence of a normal pulse rate with syncope suggests aortic stenosis, aortic insufficiency, and cyanotic congenital heart disease, and anemia.



Is the pulse rate rapid?



The presence of a rapid pulse in patients with syncope suggests the various types of ventricular and supraventricular tachycardias, including auricular fibrillation and flutter.

It may also suggest heat exhaustion or heat stroke.

Ventricular Tachycardia



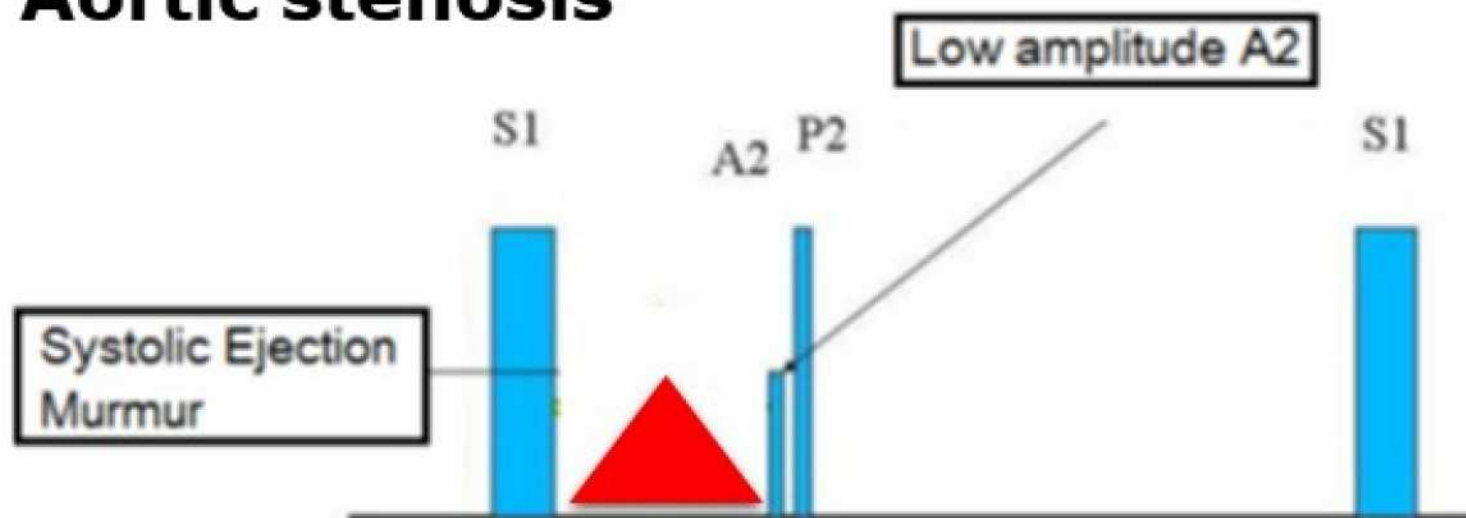
Note: Carotid sinus massage can slow the heart rate in sinus tachycardia.

Is there associated heart murmur?

The presence of a heart murmur with syncope suggests underlying cardiac lesion e.g. aortic stenosis, aortic insufficiency, and cyanotic congenital heart disease.



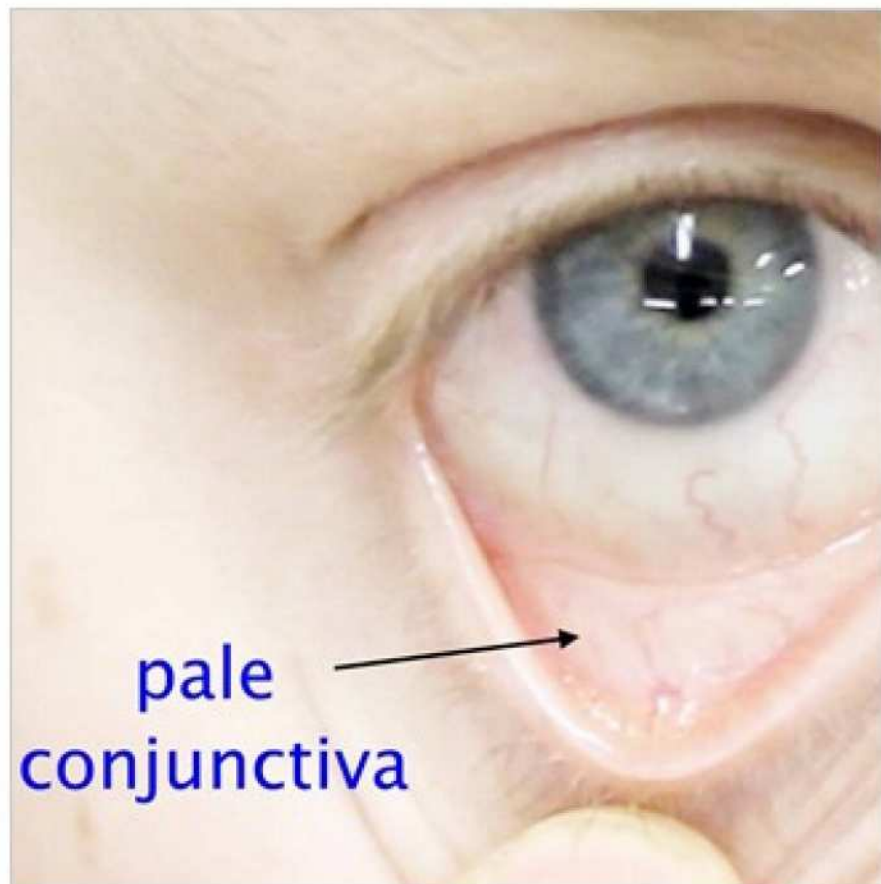
Aortic stenosis



Is there pallor?



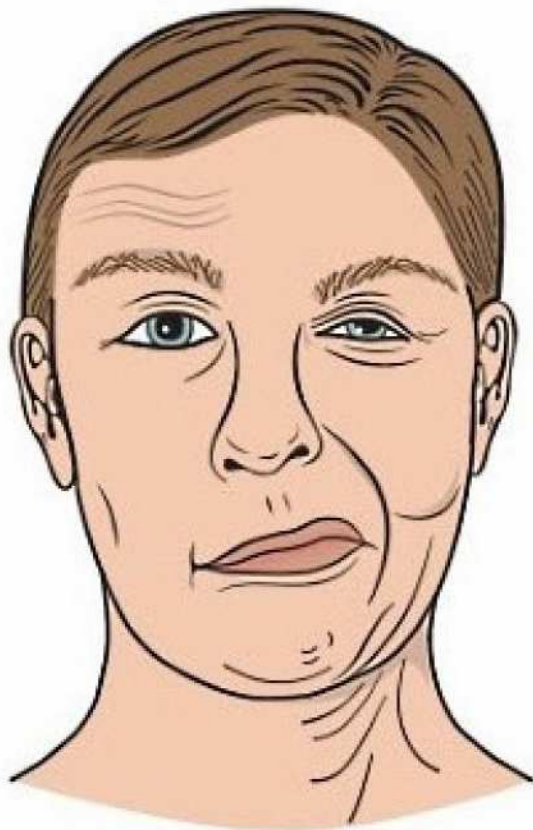
The presence of pallor should suggest shock or severe anemia and acute bleeding.



Are there focal neurologic signs?



The presence of focal neurologic signs should suggest cerebral vascular insufficiency, hypoglycemia, and transient ischemic attacks.



What drugs is the patient on?



Many antihypertensive drugs may cause syncope.





The most common causes of syncope are vasovagal causes, heart disease and arrhythmias, orthostatic hypotension, and seizures.

The condition can also be idiopathic.



- ① Syncope in the recumbent position is almost always due to Stokes-Adams attacks (high-grade atrioventricular block).
- ② Vasovagal syncope or fainting from orthostatic hypotension requires the patient to have been in the seated or upright position.
- ③ Exertional syncope is frequently cardiac in origin.



A variety of medications predispose to orthostatic hypotension, including diuretics, antihypertensives, and tricyclic antidepressants such as amitriptyline (Elavil).

Hypertension



Clinical Diagnosis: Key points

Is there systolic hypertension only?



The presence of an elevated systolic pressure only would suggest hyperthyroidism, aortic insufficiency, and atherosclerosis of the aorta.

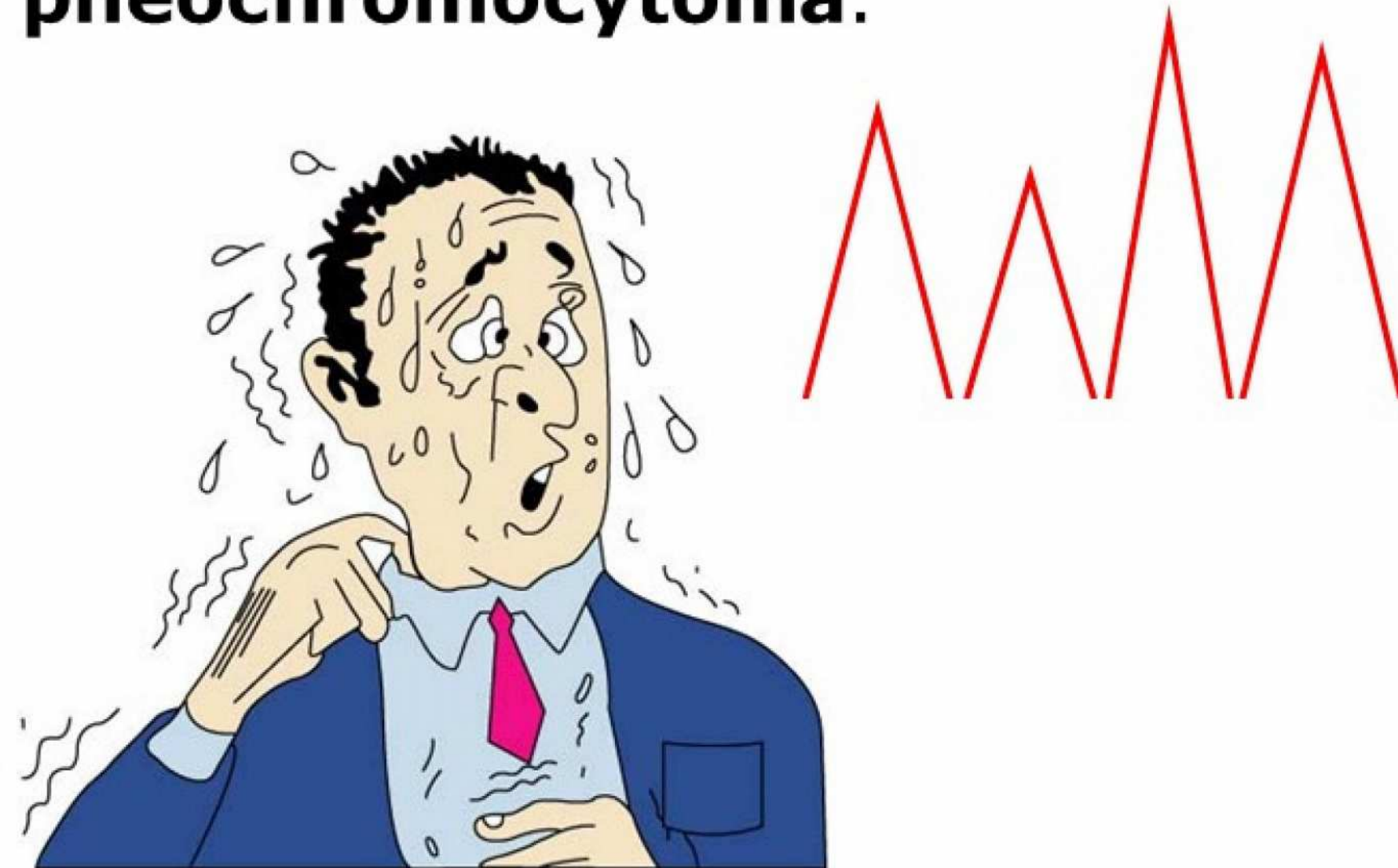


Note: Systolic hypertension in the elderly must always be taken seriously.

Is the hypertension paroxysmal?



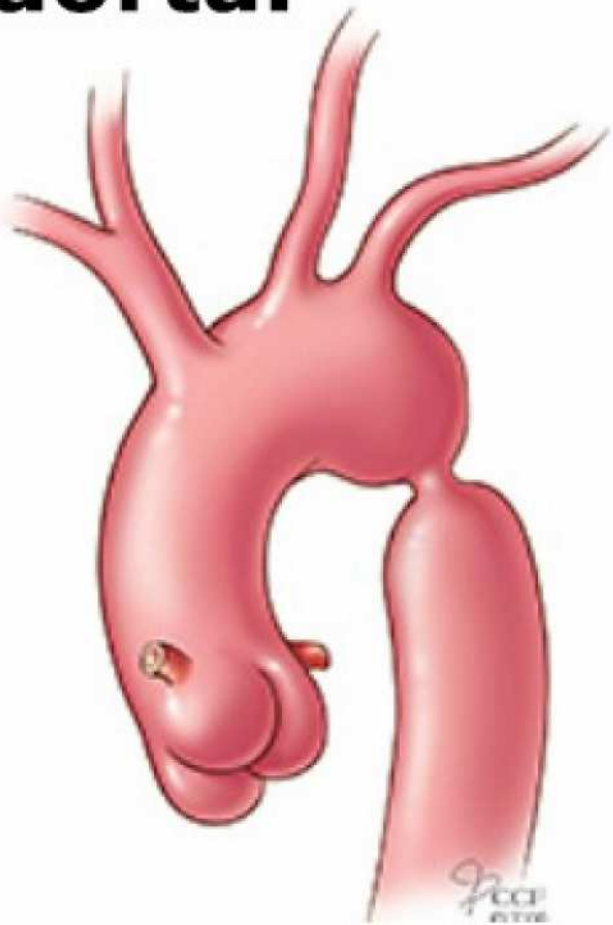
The presence of paroxysmal hypertension suggests a **pheochromocytoma**.



**Is there low blood pressure in the lower extremities OR/
Radio-femoral pulse delay?**



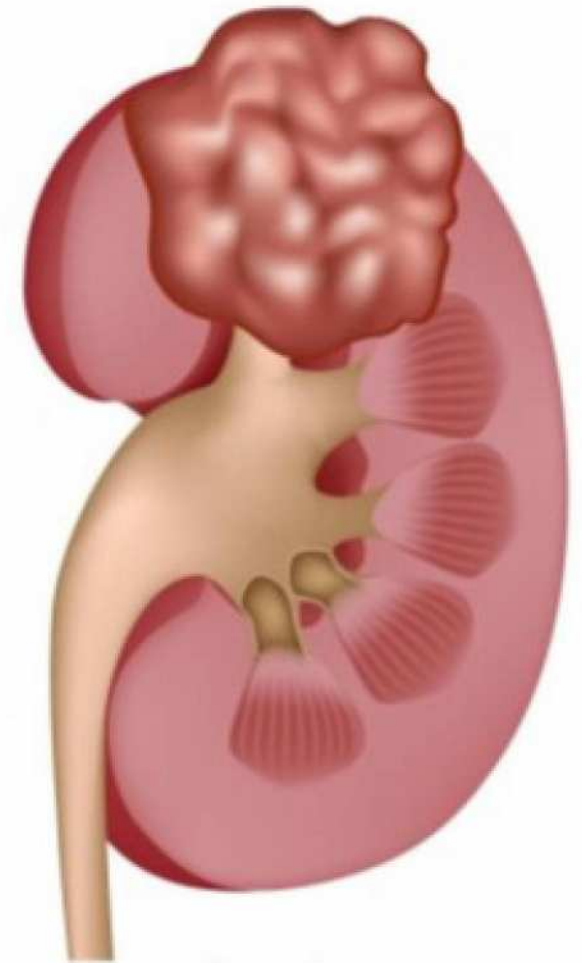
Such findings would suggest **a coarctation of the aorta.**



Is there a flank mass?



The presence of a flank mass with hypertension should suggest hypernephroma, hydronephrosis, and polycystic kidneys.



Are there abnormalities of the urinary sediment?

The presence of abnormalities of the urinary sediment in a patient with hypertension suggests glomerulonephritis, collagen disease, Henoch-Schönlein purpura, and chronic nephritis.



Red blood cell cast



Drugs history

- ✓ Stopping clonidine (Catapres) or stopping a short-acting beta-blocker such as propranolol (Inderal) can cause severe rebound hypertension.



Drugs history

- ✓ Hypertensive crisis can occur in people taking a monoamine oxidase inhibitor who ingest certain cheeses or wine containing tyramine.



Drugs history

- ✓ Ingestion of street drugs such as cocaine or amphetamines can also cause hypertensive crisis.



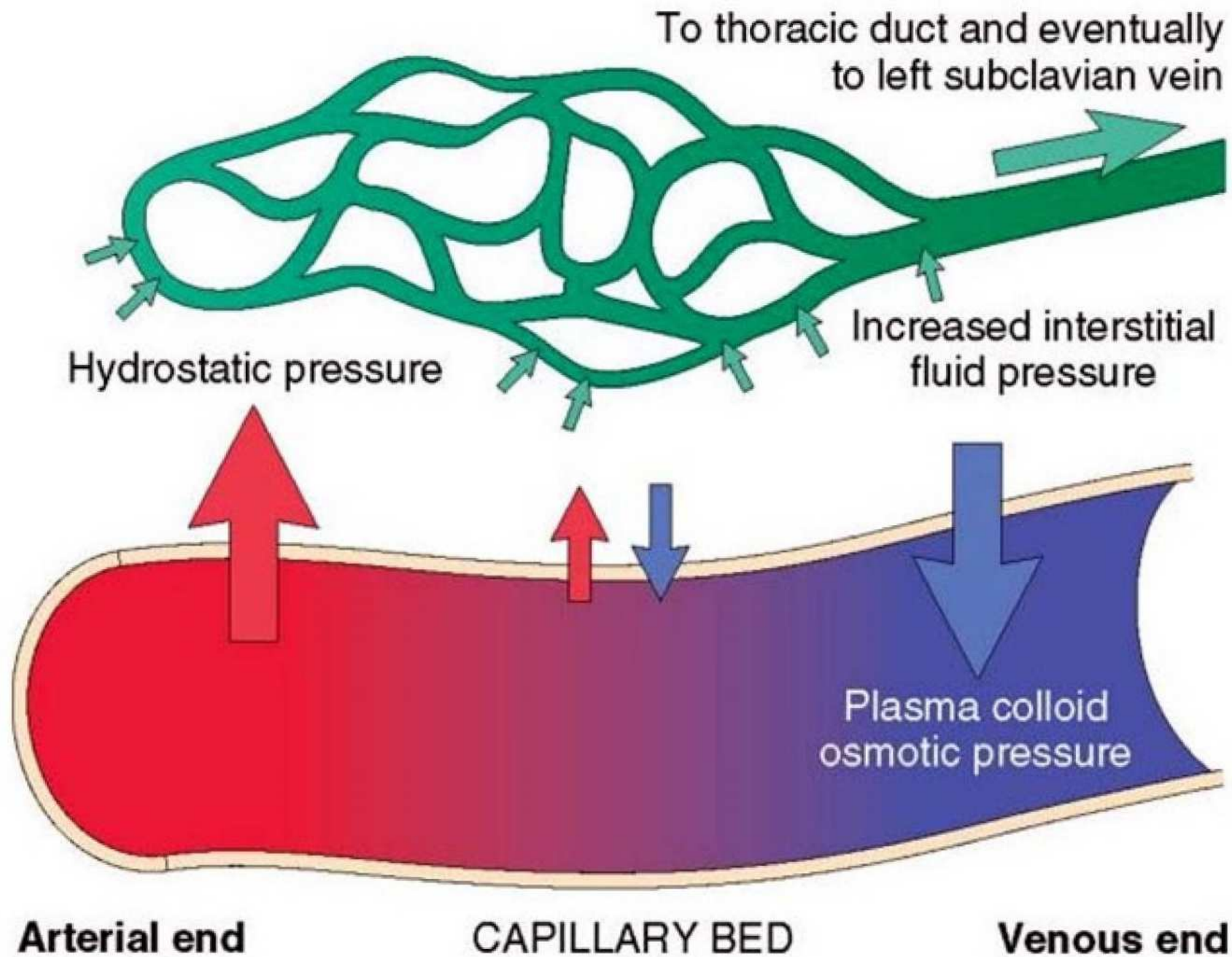
A patient with severe hypertension who has a headache with mental status changes may have hypertensive encephalopathy, which is a medical emergency.



The major immediate threat to life is a marked increase in BP with the following:

- ① Eclampsia
- ② Aortic dissection
- ③ Pulmonary edema
- ④ Myocardial infarction
- ⑤ Hypertensive encephalopathy

Generalised edema

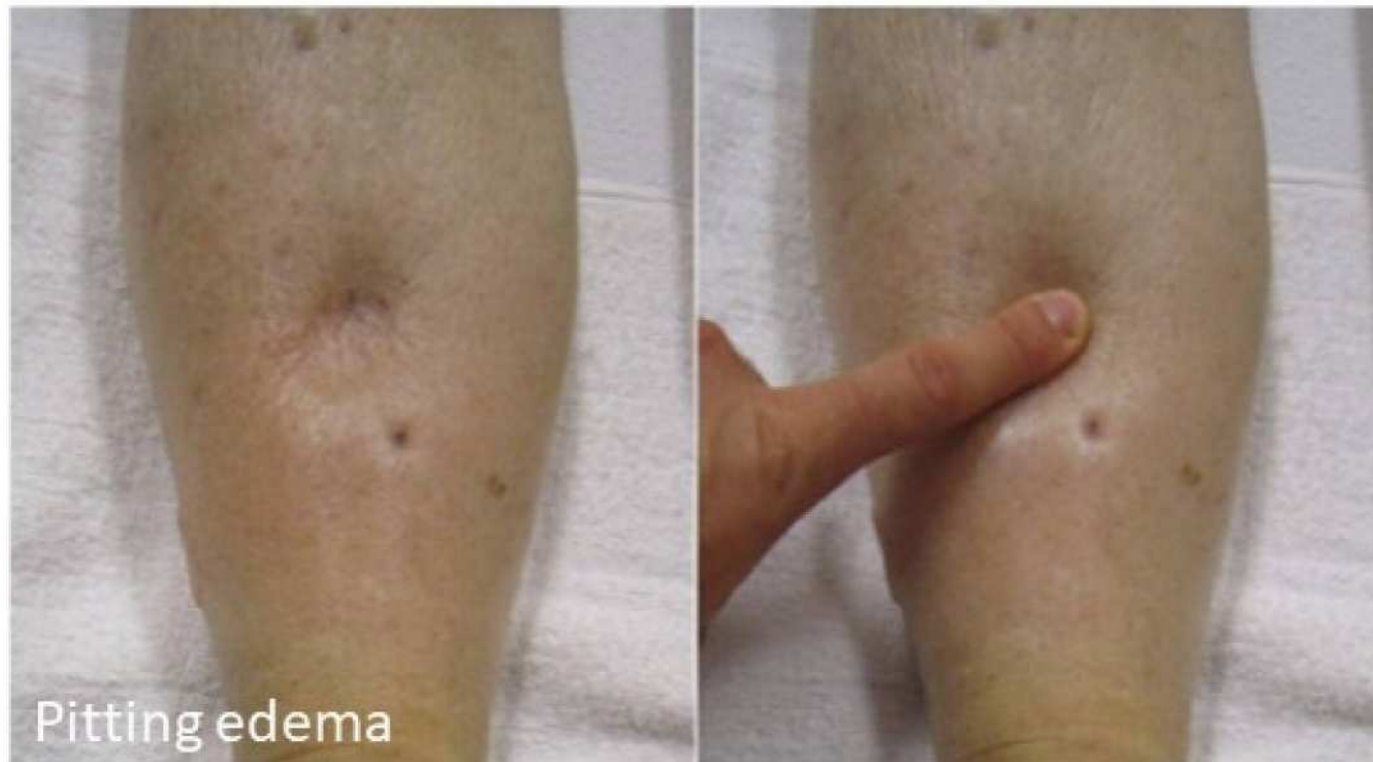


1. Does the edema pit on pressure?



Edema that **pits** on pressure is more likely to be because of heart, liver, or kidney disease.

Edema that **does not pit** on pressure is more likely because of myxedema or lymphedema.

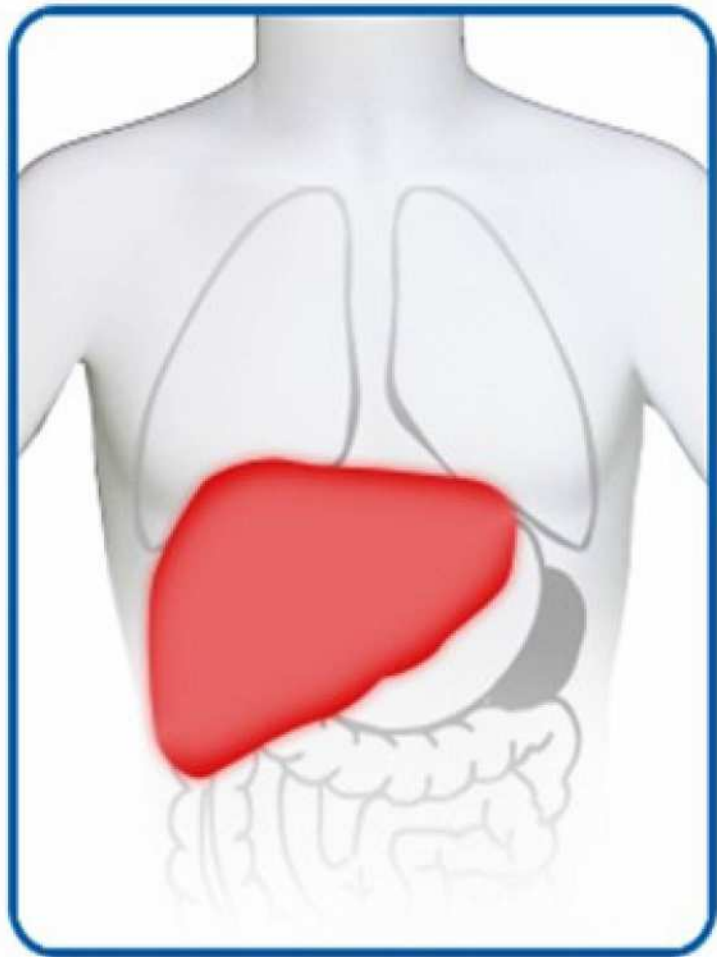


Pitting edema

Is there associated hepatomegaly?



If there is **hepatomegaly** consider liver disease such as cirrhosis or cardiac disease.



Is there ascites?



- ① If there is massive ascites along with hepatomegaly suspect liver cirrhosis
- ② If there is no or minimal ascites along with the hepatomegaly consider congestive heart failure
- ③ Ascites starting before edema suggests constrictive pericarditis.



Is there jugular vein distention?



Causes of Jugular vein distention include:

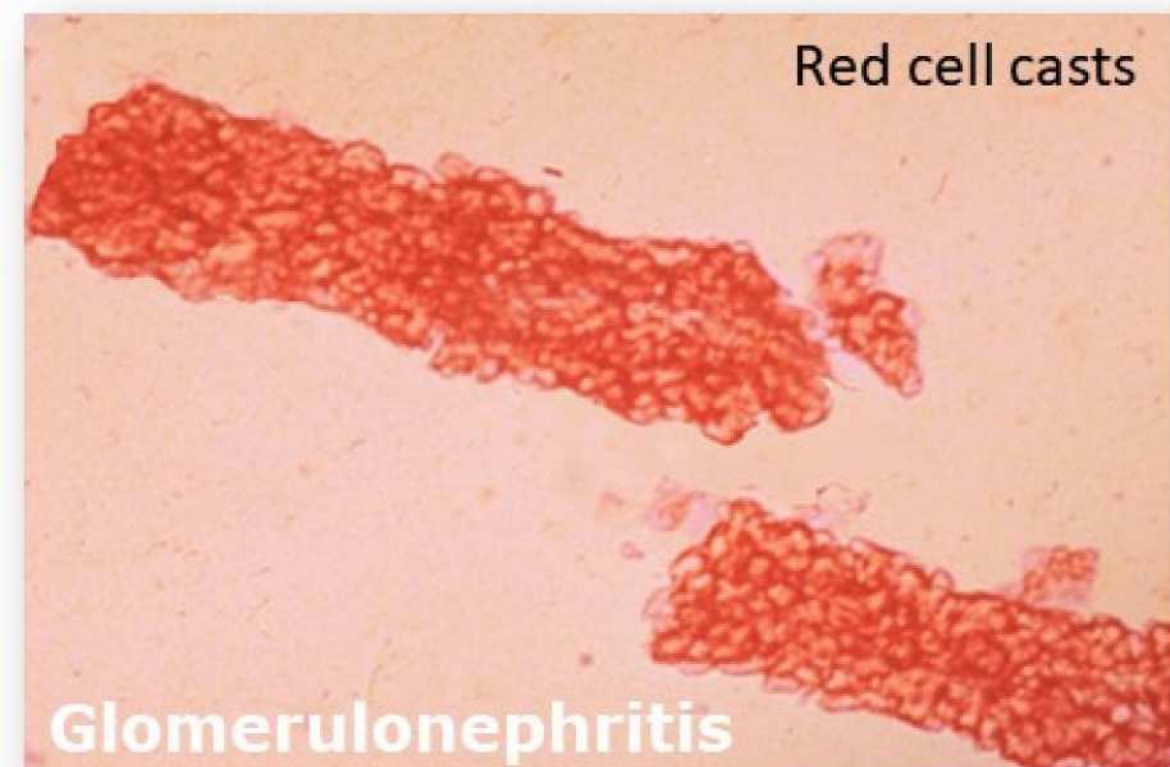
- ① **Congestive heart failure**
- ② RSHF due to Cor Pulmonale
- ③ Superior vena cava obstruction due mediastinal mass such as carcinoma of the lung
- ④ Constrictive pericarditis.



Is there abnormal urinary sediment?



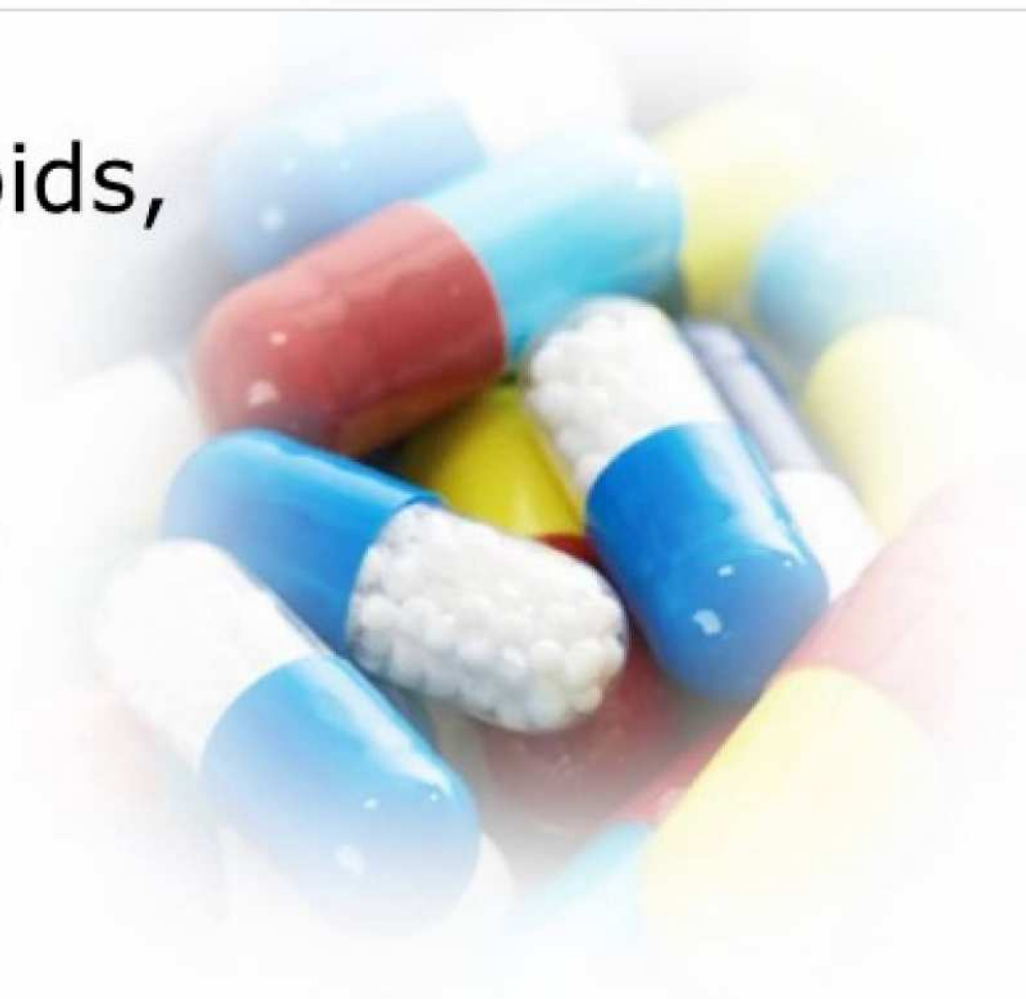
If there is abnormal urinary sediment consider **nephritis**. Which may be due to chronic glomerulonephritis or secondary to diabetes mellitus or a collagen disease e.g. SLE.



Is the patient taking any drugs that could cause edema?



Such drugs include corticosteroids, progesterone, estrogen, anti-inflammatory drugs, antihypertensive drugs such as methyldopa (Aldomet), and antidepressants.





Sudden onset of oedema in the lower limb is highly suggestive of deep venous thrombosis. Urgent investigation and treatment is required to prevent pulmonary embolism.